Fig. 13. *Phyllodromia furcifera*, sp. n., apex of abdomen of male from beneath. *a*, genital style.
14. *Phyllodromia baltica*, sp. n., apex of abdomen of male from beneath.
15. *Phyllodromia klebsi*, sp. n., „ „ „ „
16. Front femur of *Phyllodromia antiqua*, ventral aspect.
17. „ *Phyllodromia lorenz-meyeri*, ventral aspect.
18. Pronotal pattern of *Phyllodromia germari*.
19. „ „ *Phyllodromia pristina*, sp. n.

PLATE 48.

Fig. 20. *Ceratinoptera cruenta*, sp. n. ♀.
21. *Polyphaga fossilis*, sp. n. ♂ larva.
22. *Holocompsa fossilis*, sp. n. ♂.
23. Perisphæriine larva.

On the new Tipulid Subfamily CERATOCHEILINÆ.

By W. WESCHÉ, F.R.M.S. (Communicated by JOHN HOPKINSON, F.L.S.)

(PLATE 49.)

[Read 18th November, 1909.]

IN 1903 the Linnean Society honoured me by publishing a number of observations on rudimentary—or, rather, vestigial—maxillary palpi in various Muscidæ.

From West Africa has now appeared a small group of the older Nematocerous Tipulidæ, the species of which have been found by two collectors in Southern Nigeria and Ashanti, with the labial palpi developed, and, contrary to the rule in all known Tipulidæ, the maxillary aborted. I now propose to describe this remarkable subfamily, as it presents fresh evidence that the thesis formulated in the former paper, that the single pair of developed palpi found throughout Diptera are not homologous, is correct.

While in Southern Nigeria, Lt.-Col. F. Winn Sampson made a number of preparations of insects for the purpose of studying the hair-structure. Among them were three, mounted whole without pressure, of a small Tipulid which carried remarkable bifid hairs on the legs. When examining these, I noticed that not only were the flies remarkable for the hair-structure, but that they had many other peculiarities. The mouth-parts were far removed from the normal Tipulid type, and differed in most respects from the specialized type found in *Geranomyia*. The venation differed, and later on was seen to be in an unsettled condition ; and the antennæ were quite characteristic, and also presented abnormalities, as the male appeared in one species to have eight joints, and the female eleven.

On examining the West African Diptera at the British Museum I found that Dr. W. M. Graham had brought home from Obuasi, Ashanti, four specimens (one ♂, two ♀, and one whose sex was difficult to determine as the abdomen was missing) of an insect with similar mouth-parts and antennæ, but with the wings differing in pigmentation and nervation. These flies were undetermined and had no relatives in the collection.

A comparison of the venation of my material showed me that they could not all be included in the limits of a single genus. I therefore propose to establish a new subfamily, the Ceratocheilinæ, containing the genera *Ceratocheilus* * and *Neoceratocheilus*.

The condition of the sixth longitudinal vein suggests affinities with the Ptychopterinæ, though a discal cell shows a closer relationship to *Gynoplistia*; but the differences of other veins, of antennæ, and of mouth are exceedingly marked. Apart from the condition of the sixth vein, the Ceratocheilinæ are distinguished from the Limnobinæ, to which they bear a certain resemblance, by the antennæ, and by the absence of the tooth on the claws; and from *Geranomyia* by the paraglossæ, which cohere, and by the situation of the palpi, at the distal end of the proboscis, whereas in *Geranomyia* they are situated at the base near the head.

Subfamily Ceratocheilinæ, nov.

Small flies with the usual snout or clypeus of the Tipulidæ absent or represented by a plate which projects above the proboscis.

Proboscis exceedingly long and fine, from eight to fourteen times as long as the head, the palpi inserted at the tip. Antennæ with the first joint shortly cylindrical, the second much larger, subcone-shaped, with the base in the anterior position, the third smaller, cone-shaped, with the base in the posterior position; the apex bearing a long style consisting of a variable number of joints, the last two bearing long bristles.

Wings having the sixth longitudinal vein in the same condition as in *Ptychoptera* and *Gynoplistia*, and the second absent or present.

Life-history unknown.

Neoceratocheilus, gen. nov.

Small dark grey flies with the characteristic antennæ and proboscis, but are distinguished by the wing-venation and absence of pigmentation.

Head globular, with a flat plate inserted at the dorsal base of the proboscis; the proboscis (labium) exceedingly long and thin; the tip pointed and the paraglossæ (labella) unseparated and minute, appearing in dry specimens to

* Horned lip or labium.

form a bulb with a pointed extremity. The palpi are labial, single-jointed, and inserted in the ventral side at the extreme end of the proboscis, forming part of the bulb mentioned.

Antennæ with first joint short, cylindrical; second cone-shaped, larger, with the base in the anterior position; third smaller, cone-shaped, with the base in the posterior position; the apex bearing a fairly thick annulated style, with the last two annulations or joints bearing 5 or 6 long bristles.

Eyes semi-globular, equally divided in both sexes, very large, bare, and continued right under the lower sides of the head; ocelli aborted.

Thorax much developed in front and projecting over the long neck; scutellum moderate in size, under plate of scutellum evident; halteres fairly long, with moderately large heads; tegulæ rudimentary.

Abdomen thin, cylindrical; genitalia well developed, particularly the ovipositor.

Legs long and thin, without tibial bristles; pulvilli and empodium absent or rudimentary, claws simple.

Wings as long as abdomen, hyaline; auxiliary (medastinal) and first longitudinal veins only very slightly separated and ending together in the costa, second medastinal cell obliterated. Second longitudinal vein aborted, third simple; the posterior transverse vein (*hinter querader* of Schiner) connects the fourth and fifth longitudinal before the establishment of the discal cell.

Neoceratocheilus Grahami, sp. n. (Pl. 49. fig. 5.)

Head globular, dark grey; proboscis long and thin, almost as long as body and head combined; proboscis darker towards tip, and is usually carried hanging down, so that its extraordinary length is not a striking feature in a pinned specimen.

Thorax dark slaty grey, with the fore part projecting over the base of the long neck.

Abdomen thin, cylindrical, very dark grey, almost black, with fine pubescence and the genitalia a dark rusty red; the male has a pair of forcipes somewhat resembling those of *Culex*, while the female has very highly developed egg-guides with the upper blades longer than the ventral ones.

Legs same colour as the abdomen, with the coxæ lighter; long, thin, and thickened at the ends of the femora and tibiæ; metatarsus very long; second tarsal joint about a third of the length of the metatarsus; third tarsal joint half the length of the second; fourth and fifth tarsi about equal in length, half the length of the third. Appear to be of a lighter colour in the female.

Wings hyaline, with a rather long fringe of hair in the anal region; the first and auxiliary veins end in the hinder third of the costa; the fourth is

connected at its base with the first by a transverse vein which continues and forms the usual basal connection with the fifth.

Length of head and proboscis $3\frac{3}{4}$ mm., length without proboscis $4\frac{1}{2}$ mm.

Habitat. Obuasi, Ashanti. ♂ caught on flower ; ♀ in swamp, ♀ in bush-path, ? on flower.

Described from four specimens in the British Museum, bearing date 1 Sept., 1907, and collected by Dr. W. M. Graham.

Ceratocheilus, gen. nov.

Small flies with the characteristic antennæ and proboscis, but are distinguished by the wing-venation and pigmentation.

Head, proboscis, antennæ, eyes, thorax, legs, and abdomen as in *Neoceratocheilus*.

Wings with stigmata and clouded transverse veins ; auxiliary and first vein clearly separated, the latter ending a short distance after the auxiliary and forming a small second medastinal cell ; second vein short but present, third simple ; no transverse vein at the base of the fourth longitudinal vein, which leaves the fifth at a sharp angle, and the posterior transverse vein joins the fourth longitudinal in the first third of the discal cell.

Ceratocheilus Winn-Sampsoni, sp. n. (Pl. 49. figs. 1–3, 6–9.)

Head globular ; proboscis more than half the length of head and body combined.

Antennæ of usual type, but seen with the microscope are found to have eight joints in the male and eleven in the female, without reckoning an atrophying distal joint.

The eyes occupy almost all the head, only leaving bare a narrow space *under* as well as on the front.

Thorax, abdomen, and legs as in *N. Grahami* as regards structure ; colours cannot be given, as the species is described from bleached preparations.

Wings with the second longitudinal vein very short ; all the transverse veins are clouded and the whole surface is somewhat smoky, except at the tip, where a clear space stretches across the ends of the third and fourth veins to the middle vein of the discal cell ; there is a dark mark on the first and auxiliary vein near the middle of the wing, and a stigma at their junction with the costa ; there are nebulæ at the ends of the fifth longitudinal and of the two lower veins that spring from the discal cell.

Length of head and proboscis ♂ 4 mm., of which more than 3 go to the proboscis ; of ♀ 5 mm. Length of ♂ without proboscis $4\frac{1}{2}$ mm. ; of ♀ 6 mm.

Habitat. Southern Nigeria. ♂ caught on dining-table ; ♀ at Warri.

This species has been described from two preparations of Lt.-Col. Winn Sampson, one of which (♂) bears the date 25th May, 1900. They will be deposited in the British Museum as types.

CERATOCHEILUS LONGIROSTRIS, ♂, sp. n. (Pl. 49. figs. 4, 10.)

Only the male has been found; this has ten joints in the antennæ and the second joint is slightly larger than in *C. Winn-Sampsoni*; the proboscis is markedly longer than in that species; the eyes appear to be even less divided, but the head is rather pressed in the preparation and may mislead. Structure of other parts as in *Neoceratocheilus Grahami*.

Wings with the second longitudinal vein longer and consequently the subcostal cell larger than in *C. Winn-Sampsoni*; in addition to the darkening of the transverse veins, and the mark on the auxiliary and first vein, there are three small stigmata on the costa at the junctions with the auxiliary, the first, and the second longitudinal veins. The tip has not the markedly lighter portion that is found in the other species, but is not without a suggestion of its presence.

Length of head and proboscis 6 mm., of which over 5 go to the proboscis; length without proboscis $6\frac{1}{2}$ mm.

Habitat. S. Nigeria.

Described from a preparation of Lt.-Col. Winn Sampson deposited in the British Museum.

TABLE.

1 (2). Wings hyaline	*Neoceratocheilus Grahami.*
2. Wings clouded	3.
3 (4). Costa with one stigma	*Ceratocheilus Winn-Sampsoni.*
4. Costa with three stigmata, proboscis much longer	*C. longirostris.*

The remarkable specialization of the mouth-parts is a strikingly ancient character, as the palpi cannot be other than labial, and therefore the specialization dates from a period when the ancestors of the Tipulidæ possessed a full armature of the trophi.

A comparison of the wing-venation in the two genera shows the second longitudinal vein in process of obliteration and complete obliteration, a common feature of the venation of many Nematocerous flies; while the tendency of the veins to leave the lower portion of the wing is seen by the position of the lower transverse vein in *Neoceratocheilus*, which genus is obviously later in type than *Ceratocheilus*.

Finally, the antennæ show a stage which must have been gone through in the progress from a filiform type to such a condition as exists in Brachycerous flies such as *Hilara* or *Empis*.

EXPLANATION OF PLATE 49.

Fig. 1. Head of *Ceratocheilus Winn-Sampsoni*, Wesché, ♂.
2. End of proboscis of *C. Winn-Sampsoni*, highly magnified and seen from the dorsal side.
3. Plate covering the base of the labium of same insect.
4. End of proboscis of *C. longirostris*, Wesché, highly magnified and seen from the ventral side.
5. Wing of *Neoceratocheilus Grahami*, Wesché.
6. Wing of *C. Winn-Sampsoni*.
7. Wing of *C. longirostris*.
8. Antenna of *C. Winn-Sampsoni*, ♂.
9. Antenna of *C. Winn-Sampsoni*, ♀.
10. Antenna of *C. longirostris*, ♂.
11. Bifid hair of leg found on the species of *Ceratocheilus*.

Freshwater Rhizopods from the English Lake District. By James M. Brown, B.Sc. (Communicated by Prof. A. Dendy, F.R.S., Sec.L.S.)

(Plate 50.)

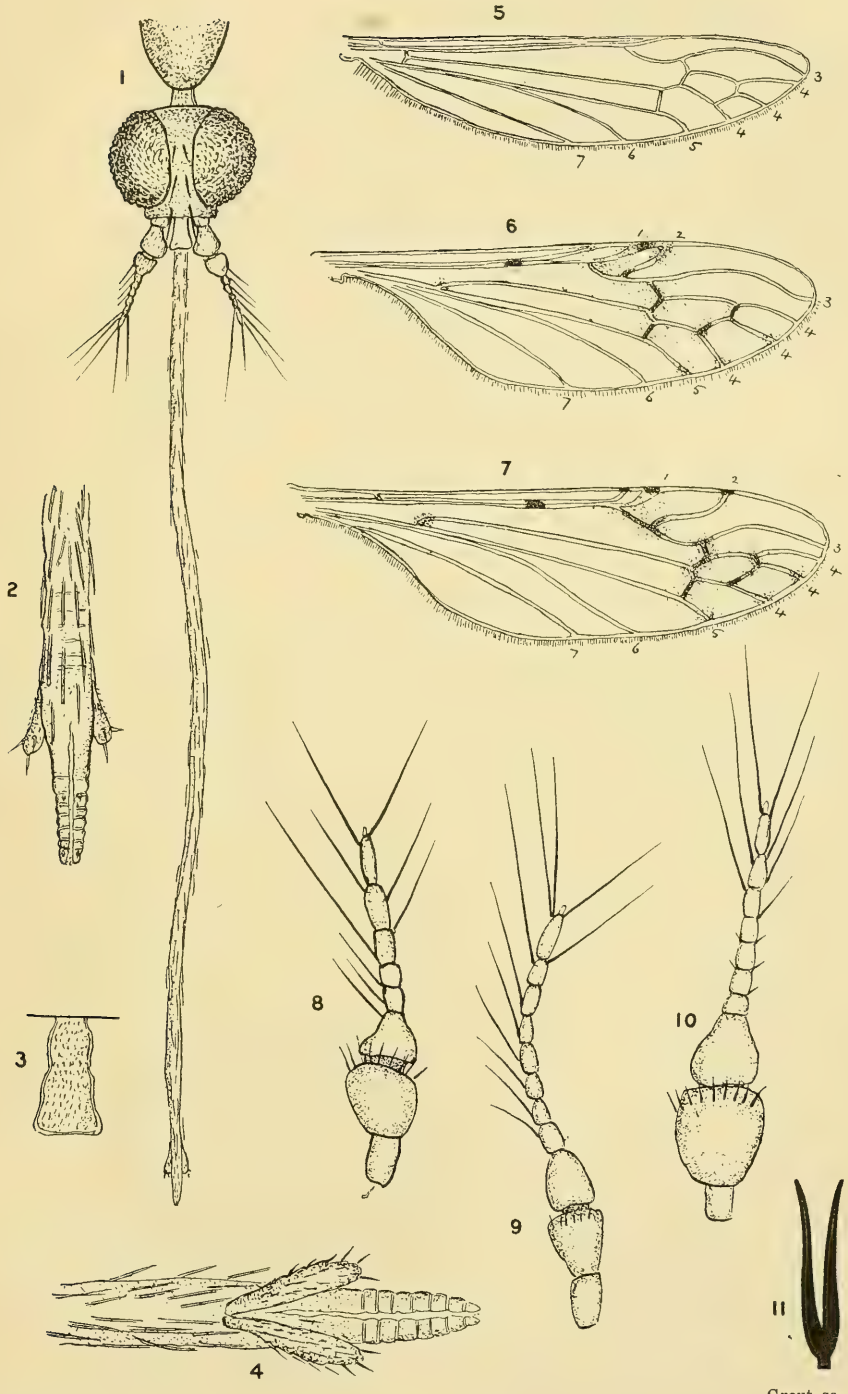
[Read 18th November, 1909.]

For the purpose of studying the variation and distribution of Freshwater Rhizopods, collections were made from various localities in the English Lake District. Though only a small area was explored, some interesting results have been obtained. The material, which consisted partly of collections of sphagnum and other bog-mosses, and partly of sediment and vegetation from tarns and lakes, was brought home and carefully washed and examined.

About 50 species of Rhizopods were identified, many of them common and familiar forms, but others, again, are less well known, while a few do not seem to have been recorded from this country. Among these, *Paulinella chromatophora*, Lauterborn, is of interest, having been found in only a few places on the Continent and in N. America, and only as a single specimen from Loch Ness in Scotland.

Naturally, many of the specimens found were empty tests, notably those of species of *Difflugia*, *Euglypha*, *Assulina*, and *Trinema*, but in most cases active individuals also occurred.

It will be seen that some species—e. g., *Difflugia oblonga* (=*D. pyriformis*), *D. constricta*, *Centropyxis aculeata*, *Nebela collaris*, *Quadrula symmetrica*, *Cyphoderia ampulla*, *Euglypha alveolata*, and *Trinema enchelys*—occur in all or nearly all the collections examined. This is probably due to the fact that,



W. W. del. Grout, sc.

NEW TIPULIDÆ.